2-16-2016

EXPONENTIAL FORM

FLOATING POINT		EXPONENTIAL
20000.	SETS OF 1/10S	$20000. \times 10^{-1}$
2000.	SETS OF 1'S	$2000. \times 10^{0}$
200.0	SETS OF 10S	200.0×10^{1}
20.00	SETS OF 100S	20.00×10^{2}
2.000	SETS OF 1000S	2.000×10^{3}
0.2000	SETS OF 10,000S	0.2000×10^{4}
⋮	⋮	⋮

NAMES:

$2000. \times 10^{0}$ ← EXPONENT

2000. = MANTISSA, 10 = BASE

CONVENIENT FORM FOR BIG & SMALL NUMBERS

↻ ↑ AND ↻ ↓

STANDARD SCIENTIFIC NOTATION

USED BY OUR CALCULATOR

_ . _ _ _ _ _ _ × 10^_

↑ NON-ZERO

EXAMPLE: $4.2719 \times 10^{4} = 42719$

ENTERING A NUMBER IN EXPONENTIAL FORM ON CALCULATOR

[EE] = "...TIMES TEN TO THE..."

SWITCH TO SCIENTIFIC MODE

EXPONENT

SCI 5 | 2nd SCI 5 | SCI 0.00

MANTISSA

TO ENTER 4.2719×10^4:

4 . 2 7 1 9 EE 4 → 4.2719 04

TO GO BACK TO FLOATING POINT:

2nd FLO 4 → 42719.

STANDARD SCIENTIFIC NOTATION - 3 SIGNIFICANT FIGURES

ROUNDING: LOOK AT THE 4th DIGIT

IF 4th DIGIT IS 0-4, TRUNCATE 4th DIGIT AND BEYOND

IF 4th DIGIT IS 5-9,
- RAISE 3rd DIGIT BY 1
- TRUNCATE 4th DIGIT AND BEYOND

EXAMPLE:

4.2719×10^4 4th DIGIT = 1

SO $\boxed{4.27 \times 10^4}$

2.468×10^{10} 4th DIGIT = 8

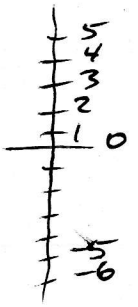
SO $\boxed{2.47 \times 10^{10}}$

CALCULATOR CAN ROUND FOR YOU:

[2nd] [FIX] [2]

PRACTICE: CONVERT TO STD. SCIENTIFIC FORM, 3 SIG. FIG.

- 2456.2
  2456.2×10^{0}
  2.4562×10^{3}
  $2.456\,2 \times 10^{3}$
  2.456×10^{3}
  2.46×10^{3}



- 31.56×10^{-6}
  3.156×10^{-5}
  3.16×10^{-5}

- 0.00212×10^{5}
  2.12×10^{2}

- 9999
  $9999. \times 10^{0}$
  9.999×10^{3}
  10.00×10^{3}
  1.000×10^{4}
  1.00×10^{4}

OPERATIONS WITH NUMBERS IN EXPONENTIAL FORM

ADDITION

$$\begin{array}{r} 1.00 \times 10^{3} \\ +\ 2.00 \times 10^{3} \\ \hline 3.00 \times 10^{3} \end{array}$$

NUMBER DENOMINATION

- GET BOTH NUMBERS TO THE SAME EXPONENT
- KEEP THAT EXPONENT FOR ANSWER
- ADD THE MANTISSAS
- PUT INTO STANDARD FORM (SCI. NOT. 3 SIG. FIG.)

$$\begin{array}{r} 1000. \\ +\ 500. \\ \hline 1500 \end{array} \qquad \begin{array}{r} 1.00 \times 10^{3} \\ 5.00 \times 10^{2} \end{array}$$

I'LL CHOOSE $\times 10^{3}$ FOR BOTH

$$\begin{array}{r} 1.00 \times 10^{3} \\ 0.500 \times 10^{3} \\ \hline 1.500 \times 10^{3} \end{array}$$

$$\boxed{1.50 \times 10^{3}}$$

SUBTRACTION

SAME FORMULA FOR ADDITION, EXCEPT SUBTRACT THE MANTISSAS

$$\begin{array}{r} 2.475 \times 10^{-2} \\ -\ 34.22 \times 10^{-3} \end{array} \qquad \begin{array}{rr} 2.475 & \times 10^{-2} \\ -\ 3.422 & \times 10^{-2} \\ \hline -0.947 & \times 10^{-2} \end{array}$$

$$\boxed{-9.47 \times 10^{-3}}$$